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(54) COMMUNICATION CONTROL METHOD, COMMUNICATION SYSTEM AND ELECTRIC DEVICE USED FOR IT

(57)Abstract:
PROBLEM TO BE SOLVED: To control an electronic device of a controlled side by an electronic device of a controller side without useless processing.
SOLUTION: Each of a VTR 11 and a camcorder 12 has a memory means storing icon information and function information. A computer 13 sends a command to request the

icon information and the function information to the VTR 11 and the camcorder 12 and obtains the information as a response. The computer 13 displays icons denoting the VTR 11 and the camcorder 12 on a display device 13a based on the icon information. The computer 13 displays a control panel denoting each function of the VTR 11 and the camcorder 12 in a form of buttons or the like on the display device 13a based on the function information. The computer 13 does not need for inquiring about whether or not the functions indicated on the panel correspond to those by the VTR 11 and the camcorder 12 and the user operates all the functions of the VTR 11 and the camcorder 12 on the panel.

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CLAIMS

[Claim(s)]

[Claim 1] In the system which communicates a control signal among two or more electronic equipment, a part of two or more above-mentioned electronic equipment [at least] has the memory means which memorized proper information. When the command which requires the above-mentioned proper information is transmitted to the 2nd electronic equipment which is electronic equipment of the side controlled [which has the above-mentioned memory means from the 1st electronic equipment which is electronic equipment by the side of control], The 2nd electronic equipment of the above is the communications control approach characterized by reading the

above-mentioned proper information and answering the 1st electronic equipment of the above as a response from the above-mentioned memory means.

[Claim 2] Two or more above-mentioned electronic equipment is the communications control approaches according to claim 1 characterized by the communications control bus which a control signal and an information signal are made intermingled and can be transmitted connecting.

[Claim 3] It is the communications control approach according to claim 1 characterized by for the above-mentioned proper information being functional information which shows the function of the 2nd electronic equipment of the above, and the 1st electronic equipment of the above controlling the 2nd electronic equipment of the above based on the above-mentioned functional information answered from the 2nd electronic equipment of the above.

[Claim 4] It is the communications control approach according to claim 3 which the 1st electronic equipment of the above has a display, and is characterized by the above-mentioned functional information including the display information for displaying the function of the 2nd electronic equipment of the above on the above-mentioned display.

[Claim 5] It is the communications control approach according to claim 1 characterized by for the 1st electronic equipment of the above to have a display, for the above-mentioned proper information to be the icon information for displaying the icon which shows the 2nd electronic equipment of the above on the above-mentioned display, and for the 1st electronic equipment of the above to display the icon which shows the 2nd electronic equipment of the above to the above-mentioned display based on the above-mentioned icon information answered from the 2nd electronic equipment of the above.

[Claim 6] It is the communications control approach according to claim 1 characterized by for the above-mentioned proper information being the homepage address information of the Internet, and for the 1st electronic equipment of the above accessing the homepage of the above-mentioned Internet based on the above-mentioned homepage address information, and acquiring predetermined information.

[Claim 7] The above-mentioned proper information is the communications control approach according to claim 1 characterized by what is described in the language for the Internet.

[Claim 8] In the communication system which communicates a control signal

among two or more electronic equipment, a part of two or more above-mentioned electronic equipment [at least] has the memory means which memorized proper information. The 1st electronic equipment which is electronic equipment by the side of control is equipped with a command transmitting means to transmit the command which requires the above-mentioned proper information to the 2nd electronic equipment which is electronic equipment of a controlled side. The 2nd electronic equipment of the above is communication system characterized by having a response reply means to receive the above-mentioned command, to read the above-mentioned proper information from the above-mentioned memory means, and to answer the 1st electronic equipment of the above as a response when it has the above-mentioned memory means.

[Claim 9] Two or more above-mentioned electronic equipment is communication system according to claim 8 characterized by the communications control bus which a control signal and an information signal are made intermingled and can be transmitted connecting.

[Claim 10] It is the communication system according to claim 8 which the above-mentioned proper information is functional information which shows the

function of the 2nd electronic equipment of the above, and is characterized by equipping the 1st electronic equipment of the above with the control means which receives the above-mentioned functional information answered from the 2nd electronic equipment of the above, and controls the 2nd electronic equipment of the above based on this functional information.

[Claim 11] The 1st electronic equipment of the above is communication system according to claim 10 characterized by having further a display and a functional display means to display the function of the 2nd electronic equipment of the above on the above-mentioned display based on the above-mentioned functional information.

[Claim 12] The above-mentioned functional information is communication system according to claim 11 characterized by including the display information which displays the function of the 2nd electronic equipment of the above on the above-mentioned display.

[Claim 13] It is the communication system according to claim 8 which the above-mentioned proper information is the icon information for displaying the icon which shows the 2nd electronic equipment of the above on the above-mentioned display, and is characterized by to be equipped the 1st

electronic equipment of the above with a display and an icon display means display the icon which shows the 2nd electronic equipment of the above to the above-mentioned display based on the above-mentioned icon information answered from the 2nd electronic equipment of the above.

[Claim 14] It is the communication system according to claim 8 characterized by for the above-mentioned proper information being the homepage address information of the Internet, and equipping the 1st electronic equipment of the above with an Internet access means to access the homepage of the above-mentioned Internet based on the above-mentioned homepage address information answered from the 2nd electronic equipment of the above, and to acquire predetermined information.

[Claim 15] Electronic equipment characterized by having a command transmitting means to be electronic equipment which uses a control signal with the communication system which communicates among two or more electronic equipment, and to transmit the command which requires proper information of the electronic equipment of a controlled side.

[Claim 16] Two or more above-mentioned electronic equipment is electronic equipment according to claim 15 characterized by the communications control

bus which a control signal and an information signal are made intermingled and can be transmitted connecting.

[Claim 17] The above-mentioned proper information is electronic equipment according to claim 15 characterized by having the control means which receives the above-mentioned functional information which shows the function of the electronic equipment of the side controlled [above-mentioned], and which it is functional information and was answered from the electronic equipment of the side controlled [above-mentioned], and controls the electronic equipment of the side controlled [above-mentioned] based on this functional information.

[Claim 18] Electronic equipment according to claim 17 characterized by having further a display and a functional display means to display the function of the electronic equipment of the side controlled [above-mentioned] on the above-mentioned display based on the above-mentioned functional information.

[Claim 19] The above-mentioned functional information is electronic equipment according to claim 17 characterized by including the display information which displays the function of the electronic equipment of the side controlled [above-mentioned] on the above-mentioned display.

[Claim 20] It is electronic equipment according to claim 15 carry out having an

icon display means display the icon which shows the electronic equipment of the side controlled [above-mentioned] to the above-mentioned display based on the above-mentioned icon information to which the above-mentioned proper information is the icon information for displaying the icon which shows the electronic equipment of the side controlled [above-mentioned] on the above-mentioned display, and it was answered as the display from the electronic equipment of the side controlled [above-mentioned] as the description.

[Claim 21] The above-mentioned proper information is electronic equipment according to claim 15 characterized by having an Internet access means to receive the homepage address information of the above-mentioned Internet which it is the homepage address information of the Internet and was answered from the electronic equipment of the side controlled [above-mentioned], to access the homepage of the above-mentioned Internet based on this homepage address information, and to acquire predetermined information.

[Claim 22] Electronic equipment characterized by having the memory means which is electronic equipment which uses a control signal with the communication system which communicates among two or more electronic equipment, and memorized proper information, and a response reply means to

read the above-mentioned proper information and to answer the electronic equipment by the side of control as a response from the above-mentioned memory means when receiving the command which requires proper information.

[Claim 23] Two or more above-mentioned electronic equipment is electronic equipment according to claim 22 characterized by the communications control bus which a control signal and an information signal are made intermingled and can be transmitted connecting.

[Claim 24] The above-mentioned proper information is electronic equipment according to claim 22 characterized by being the functional information which shows a self function.

[Claim 25] The above-mentioned functional information is electronic equipment according to claim 24 characterized by including the display information for displaying the self above-mentioned function on a display.

[Claim 26] The above-mentioned proper information is electronic equipment according to claim 22 characterized by being the icon information for displaying the icon which shows self on a display.

[Claim 27] The above-mentioned proper information is electronic equipment

according to claim 22 characterized by being the homepage address information of the Internet.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the electronic equipment used for the communications control approach at the time of communicating among two or more electronic equipment connected by communications control bus which a control signal and an information signal are made intermingled like the serial bus based on IEEE-1394, and can be transmitted, communication system, and it. detailed -- control -- a side -- electronic equipment -- -ed -- control -- a side -- electronic equipment -- a function -- information -- an icon -- information -- etc. -- a proper -- information -- a demand -- being possible -- ** -- carrying out -- things -- control -- a side -- electronic equipment -- depending -- -ed -- control -- a side -- electronic equipment -- control -- being useless -- processing -- not carrying out -- a ** -- good -- it was going to carry out -- communications control -- an approach -- etc. -- starting -- a thing -- it is .

[0002]

[Description of the Prior Art] Two or more electronic equipment is connected by communications control bus which a control signal and an information signal are made intermingled and can be transmitted like the serial bus (henceforth an "IEEE1394 serial bus") based on IEEE-1394, and the communication system

which communicates a control signal and an information signal between the electronic equipment of these plurality is considered.

[0003] Drawing 7 shows an example of the communication system which comes to connect two or more electronic equipment by IEEE1394 serial bus.

[0004] This communication system 30 is equipped with the video tape recorder (henceforth "VTR") 31, the camera one apparatus video tape recorder (henceforth a "camcorder") 32, and the computer 33 for controlling VTR31 and a camcorder 32. VTR31 and a computer 33 are connected by IEEE1394 serial bus 34, and the camcorder 32 and the computer 33 are connected by IEEE1394 serial bus 35. And display 33a, keyboard 33b, and mouse 33c are connected to the computer 33 for the user interface. Here, #A - #C shows the node ID on a computer 33, a camcorder 32, and the system of VTR31, respectively.

[0005] Transmission of the signal in each electronic equipment in a system is performed by Time Division Multiplexing in predetermined every communication link cycle (for example, 125microsec), as shown in drawing 8 . This signal transmission is started by sending out the cycle-start packet (CSP) which shows that it is at the initiation time whose electronic equipment called a cycle master is a communication link cycle on a bus.

[0006] The gestalt of the communication link in 1 communication-link cycle has the Iso communication link which carries out isochronous (henceforth "Iso") transmission of the information signal of a video data, audio data, etc., and the Async communication link which carries out asynchronous (henceforth "Async") transmission of the control signals, such as control command. An Iso communication link packet is transmitted ahead of an Async communication link packet. Two or more Iso data are distinguishable by ****** which gives channel numbers 1, 2, and 3, ..., n to each of an Iso communication link packet. After transmission of an Iso communication link packet is completed, the period to the following cycle-start packet is used for transmission of an Async communication link packet.

[0007] In an Async communication link, a certain electronic equipment calls a controller the side which puts a command, and a call and this command into a packet, and sends the control signal which requires something of other electronic equipment. Moreover, the side which receives a command is called a target. A target answers a controller in the control signal which shows the activation result of a command if needed, i.e., the packet which put in the response.

[0008] This command and response communicate between one controller and one target, and call a command transaction a series of exchanges which start by transmission of a command and are ended by the reply of a response. It is decided that it is quick as much as possible after a target receives a command, for example, less than 100 msecs are answered in a response. The reason is for preventing processing being overdue, when the controller side waited for the response continuously so long, processing does not become slow or a response does not return according to a certain failure.

[0009] It can require or the present condition of a target can be asked with a controller carrying out specific actuation to a target by the command and the transaction. Every electronic equipment in a system can carry out initiation and termination of a command transaction. That is, every electronic equipment can become a controller and a target.

[0010] Drawing 9 shows the structure of an Async communication link packet. A command and a response are the same structures. In this drawing, it passes through the data of a packet the bottom from a top, and they are transmitted to the right in order from the left. The packet consists of a packet header and a data block. And specification is decided by IEEE1394 and all of packet headers and

the data CRC in a data block (refer to network Kakebe part) write the contents of the data block in the address shown in destination offset of the electronic equipment shown by Destination ID from the electronic equipment which the source ID of a packet header shows.

[0011] For example, in the communication system 30 shown in drawing 7 , when transmitting a command to VTR31 from a computer 33, #A and Destination ID of Source ID are #C and the room where destination offset was assigned as area which stores a command within VTR31. When a computer 33 wants to transmit a command to all other electronic equipment in a system, 16 bits of Destination ID are made into 'all ones'. This communication configuration is called broadcasting.

[0012] In the data block of the structure of the Async communication link packet of drawing 9 , CTS (command transaction set) shows the class of command language. Moreover, in the case of a command, CT/RC (a command type / response code) shows a demand, and, in the case of a response, shows the class of reply to a demand. HA (header address) is the same as the command which corresponds in the semantics that the partner who requires shows whether it is the whole device and whether it is a subdevice in a device (functional unit) in the case of a command, and the partner replies in the case of

a response. OPC (operation code) shows command code, i.e., a concrete demand, and shows a parameter required for the demand at OPR (operand) following it.

[0013] Drawing 10 shows the configuration of the part which performs the exchange of the command and response which made VTR31 the example and mentioned it above among the electronic equipment in a system. This VTR31 has the VTR device 36 and the IEEE1394 bus transceiver block 37.

[0014] The VTR device 36 consists of microcomputers (henceforth a "microcomputer"), and is equipped with the VTR subdevice 38 which performs processing of the command about the record/reversion system in VTR (not shown) etc., the tuner subdevice 39 which performs processing of the command about the tuner in VTR (not shown) etc., and the timer subdevice 40 which performs processing of the command about the timer in VTR (not shown) etc. These subdevices 38-40 consist of software of a microcomputer.

[0015] The IEEE1394 bus transceiver block 37 detects the Async communication link packet which received through the bus, and sends the command in it to the VTR device 36. The VTR device 36 will operate subdevices 38-40 according to the concrete demand, if a command is received. For example,

a command is passed to the VTR subdevice 38 when the PLAY command addressed to VTR subdevice 38 is received. The VTR subdevice 38 performs processing controlled to make record/reversion system into a playback condition.

[0016] Moreover, for example, the VTR subdevice 38 supervises the various statuses (MEKAMODO, time code, etc.) of record/reversion system, and creates a response if needed. This response is transmitted to the IEEE1394 bus transceiver block 37 from the VTR device 36. And the IEEE1394 bus transceiver block 37 puts a response into an Async communication link packet, and sends it out to a bus.

[0017] Drawing 11 A shows the format configuration of a command, and drawing 11 B shows the format configuration of a response. Here, CTS is set to "0"h.

[0018] Here, the class, i.e., the command type, of a demand of the command by which the current definition is carried out (1) The CONTROL command for controlling the functional activation for a communication link, (2) The INQUIRY command for asking whether the candidate for a communication link supports the specific CONTROL command, (3) When the STATUS command for asking the condition about the specific function for a communication link and the condition for (4) communication links have change, there are four kinds of the

NOTIFY commands for requiring the report.

[0019] For example, a format of the CONTROL command which requires slow playback from the VTR subdevice 38 of VTR31 shown in drawing 10 comes to be shown in drawing 11 C. And a format of the response which answers a letter from the VTR subdevice 38 to it turns into a format of an ACCEPTED response as shown in drawing 11 D, when the CONTROL command is supported and it consents to the demand, and when the CONTROL command is not supported on the other hand, it turns into a format of a NOT-IMPLEMENTED response as shown in drawing 11 E.

[0020]

[Problem(s) to be Solved by the Invention] By the way, like the communication system 30 shown in drawing 7 , when a computer controls the system in the communication system by which two or more AV (Audio-Video) devices were connected to the computer, displaying the control panel for controlling the icon of each device and a predetermined device on a display, and urging actuation of a user is performed.

[0021] In this case, the application program of a computer prepares an icon and a control panel. Each function which the device of a controlled system has in a

control panel is shown by in the form of the carbon button etc., and a computer transmits a predetermined command to a controlled system so that the function to correspond by button grabbing may be performed.

[0022] However, the actually connected device does not support all the functions shown in the control panel. Therefore, the computer needed to ask whether correspond to the device used as a controlled system about each of the functions shown in the control panel, needed to wait for the answerback, and needed to be made to reflect it in activation of one's application program. Moreover, when the application program did not support the function which the device used as a controlled system has, about the function, it was not able to be operated on the control panel.

[0023] So, it aims at enabling it to perform control of the electronic equipment of the side controlled by the electronic equipment by the side of control good [without carrying out useless processing] in this invention.

[0024]

[Means for Solving the Problem] In the system by which the communications control approach concerning this invention communicates a control signal among two or more electronic equipment A part of two or more electronic

equipment [at least] has the memory means which memorized proper information. When the command which requires proper information is transmitted to the 2nd electronic equipment which is electronic equipment of the side controlled [which has a memory means from the 1st electronic equipment which is electronic equipment by the side of control], The 2nd electronic equipment is characterized by reading proper information and answering the 1st electronic equipment as a response from a memory means.

[0025] Moreover, the communication system concerning this invention sets a control signal among two or more electronic equipment to the communication system which communicates. A part of two or more electronic equipment [at least] has the memory means which memorized proper information, and the 1st electronic equipment which is electronic equipment by the side of control It has a command transmitting means to transmit the command which requires proper information to the 2nd electronic equipment which is electronic equipment of a controlled side. The 2nd electronic equipment When it has a memory means, a command is received and it has a response reply means to read proper information and to answer the 1st electronic equipment as a response from a memory means.

[0026] Moreover, the electronic equipment concerning this invention is electronic equipment which uses a control signal with the communication system which communicates among two or more electronic equipment, and is equipped with a command transmitting means to transmit the command which requires proper information of the electronic equipment of a controlled side.

[0027] Moreover, the electronic equipment concerning this invention is electronic equipment which uses a control signal with the communication system which communicates among two or more electronic equipment, and is equipped with the memory means which memorized proper information, and a response reply means to read proper information and to answer the electronic equipment by the side of control as a response from a memory means when receiving the command which requires proper information.

[0028] The communication link of a control signal is performed among two or more electronic equipment. For example, two or more electronic equipment is connected by the communications control bus which a control signal and an information signal are made intermingled and can be transmitted, and the communication link of an information signal and a control signal is performed among two or more electronic equipment.

[0029] A part of two or more electronic equipment [at least] has the memory means which memorized the icon information for displaying on a display the icon which shows proper information, for example, the functional information which shows a self function, and self etc. The display information for displaying the function on a display, for example is also included in functional information.

[0030] The 1st electronic equipment which is electronic equipment by the side of control transmits the command which requires proper information to the 2nd electronic equipment which is electronic equipment of a controlled side. When the 2nd electronic equipment has the memory means which memorized proper information, from a memory means, this 2nd electronic equipment reads proper information, and answers the 1st electronic equipment as a response in that proper information.

[0031] The 1st electronic equipment displays the control panel which equipped the display with the function of the 2nd electronic equipment in the form of the carbon button etc. based on the functional information, when the proper information answered from the 2nd electronic equipment is for example, functional information. And by actuation of pushing a user's carbon button, from the 1st electronic equipment, a command is transmitted so that the function

corresponding to the 2nd electronic equipment may be performed.

[0032] Moreover, the 1st electronic equipment displays the icon which shows the 2nd electronic equipment to a display based on the icon information, when the proper information answered from the 2nd electronic equipment is for example, icon information.

[0033] Moreover, when the proper information answered from the 2nd electronic equipment is the homepage address information of the Internet, the 1st electronic equipment accesses the homepage of the Internet based on the homepage address information, and acquires predetermined information, for example, the functional information on the 2nd electronic equipment, and icon information. And the 1st electronic equipment displays the control panel which equipped the display with the function of the 2nd electronic equipment in the form of the carbon button etc. based on functional information and icon information, and the icon which shows the 2nd electronic equipment.

[0034]

[Embodiment of the Invention] Hereafter, the gestalt of implementation of this invention is explained, referring to a drawing. Drawing 1 shows the communication system 10 as a gestalt of the 1st operation. This communication

system 10 as well as the communication system 30 shown in drawing 7 mentioned above comes to connect two or more electronic equipment by IEEE1394 serial bus.

[0035] This communication system 10 is equipped with the computer 13 for controlling VTR11, a camcorder 12, and VTR11 and a camcorder 12. VTR11 and a computer 13 are connected by IEEE1394 serial bus 14, and the camcorder 12 and the computer 13 are connected by IEEE1394 serial bus 15. And display 13a, keyboard 13b, and mouse 13c are connected to the computer 13 for the user interface. Here, #A - #C shows the node ID on a computer 13, a camcorder 12, and the system of VTR11, respectively.

[0036] Like the communication system 30 which shows transmission of the signal in each electronic equipment in a system to drawing 7 mentioned above, it is carried out by Time Division Multiplexing for every predetermined communication link cycle, the information signal of a video data, audio data, etc. is transmitted by the Iso communication link packet, and control signals, such as control command, are transmitted by the Async communication link packet (refer to drawing 8). And when the electronic equipment by the side of control (controller) requires something of the electronic equipment (target) of a

controlled side, a controller puts a command (a command format is illustrated to drawing 11 A) into an Async communication link packet (the structure of an Async communication link packet is illustrated to drawing 9), and transmits it to a target. And a target puts in the response (a response format is illustrated to drawing 11 B) which shows the activation result of a command if needed, and answers a controller.

[0037] Drawing 2 shows the configuration of the part which performs the exchange of the command and response which made VTR11 the example and mentioned it above among the electronic equipment in a system. This VTR11 has the VTR device 16 and the IEEE1394 bus transceiver block 17 like VTR31 in the communication system 30 shown in drawing 7 .

[0038] And the VTR device 16 consists of microcomputers and is equipped with the VTR subdevice 18 which performs processing of the command about the record/reversion system in VTR (not shown) etc., the tuner subdevice 19 which performs processing of the command about the tuner in VTR (not shown) etc., and the timer subdevice 20 which performs processing of the command about the timer in VTR (not shown) etc. These subdevices 18-20 consist of software of a microcomputer.

[0039] The IEEE1394 bus transceiver block 17 detects the Async communication link packet which received through the bus, and sends the command in it to the VTR device 16. The VTR device 16 will operate subdevices 18-20 according to the concrete demand, if a command is received. Moreover, subdevices 18-20 supervise the various statuses, and create a response if needed. This response is transmitted to the IEEE1394 bus transceiver block 17 from the VTR device 16. And the IEEE1394 bus transceiver block 17 puts a response into an Async communication link packet, and sends it out to a bus.

[0040] In the gestalt of this operation, the edit application program is installed in the computer 13, and a user can control VTR11 and a camcorder 12 by actuation on the control panel displayed on display 13a, and can realize an editing task. Here, each function which VTR11 and a camcorder 12 have in the control panel displayed on display 13a is shown by in the form of a carbon button etc.

[0041] not mentioning above, either -- VTR11 and the camcorder 12 have the memory means which memorized the functional information which shows a self function as proper information, respectively, and the icon information for displaying the icon which shows self. In case a computer 13 performs an editing

task, it transmits the command which requires the icon information mentioned above and functional information to VTR11 or a camcorder 12. And VTR11 and a camcorder 12 answer a letter considering icon information or functional information as a response to a computer 13 to it.

[0042] Here, in the communication system 10 shown in drawing 1 , the case where the command which requires icon information and functional information of VTR11 is transmitted is considered from a computer 13.

[0043] In this case, a format of the CONTROL command transmitted to VTR11 more nearly first than a computer 13 comes to be shown in drawing 3 A. A format of the response which answers a computer 13 from the VTR subdevice 16 of VTR11 turns into a format of an ACCEPTED response as shown in drawing 3 B to it. In a format of this response OPR The symbolic convention of icon information or functional information, and its information, for example, a bit map format, A JPEG (JointPhotographic Experts Group) format, The language form further for the Internet, for example, HTML, (HyperText Markup Language) VRML (Virtual Reality Modeling Language), Java Script (script language which Sun and U.S. Netscape Communications Corp. developed) etc. is shown.

[0044] Since the demand of the CONTROL command cannot be accepted

supposing VTR11 does not have the memory means which memorized icon information and functional information, a format of the response which answers a computer 13 from the VTR subdevice 16 of VTR11 turns into a format of a NOT-IMPLEMENTED response as shown in drawing 3 C.

[0045] The computer 13 which received the ACCEPTED response as shown in drawing 3 B carries out the following control action. That is, when icon information is acquired, it controls to display the icon which shows VTR11 to display 13a based on the icon information. Moreover, when functional information is acquired, it controls to display the control panel which showed each function which VTR11 has in the form of the carbon button etc. on display 13a based on the functional information. In addition, the indicative data of the control panel may be included in functional information.

[0046] Thus, in the condition that the control panel which showed each function which VTR11 has in the form of the carbon button etc. was displayed on display 13a, when the predetermined functional division of a control panel is operated by the user by keyboard 13b or mouse 13c, the command required as a computer 13 performing the predetermined function to VTR11 will be transmitted.

[0047] Drawing 4 shows the actuation at the time of requiring icon information

and functional information in succession to VTR11 from the computer 13 in the communication system 10 shown in drawing 1 .

[0048] First, a computer 13 transmits the CONTROL command which requires icon information to VTR11. To it, from a memory means, the VTR device 16 of VTR11 reads icon information, and answers a computer 13 by making the icon information into an ACCEPTED response. A computer 13 is controlled to display the icon which shows VTR11 to display 13a based on icon information.

[0049] Next, a computer 13 transmits the CONTROL command which requires functional information to VTR11. To it, from a memory means, the VTR device 16 of VTR11 reads functional information, and answers a computer 13 by making the functional information into an ACCEPTED response. A computer 13 is controlled to display the control panel which showed each function which VTR11 has in display 13a in the form of the carbon button etc. based on functional information.

[0050] In addition, although **** explained the case where the command which requires icon information and functional information was transmitted to VTR11 from a computer 13, it is similarly carried out about the case where the command which requires icon information and functional information is transmitted to a

camcorder 12 from a computer 13. Drawing 5 shows an example of the display screen 25 of display 13a, and the icon 26 which shows VTR11, the icon 27 which shows a camcorder 12, and the control panel 28 which showed each function which VTR11 has in the form of the carbon button etc. are displayed. A user can operate VTR11 on this control panel 28.

[0051] Moreover, the control panel which showed each function in which a camcorder 12 has the icon 27 which shows a camcorder 12 instead of a control panel 28 by carrying out click actuation, in the form of the carbon button etc. in this condition is displayed. Thereby, a user becomes possible [operating a camcorder on a control panel].

[0052] Thus, in the communication system 10 shown in drawing 1 , a computer 13 can require icon information and functional information of VTR11 or a camcorder 12, and can display an icon and a control panel on display 13a based on the icon information and functional information which have been answered.

[0053] Therefore, the function shown in the control panel of VTR11 displayed on display 13a or a camcorder 12 does not need to become each function which VTR11 and a camcorder 12 have, respectively, and a thing corresponding to one to one, it is not necessary to ask whether the computer 13 corresponds about

the function shown in VTR11 or the camcorder 12 at the control panel and, and a user can operate all the functions of VTR11 or a camcorder 12 on a control panel.

[0054] Next, the gestalt of the 2nd operation is explained. Drawing 6 shows communication system 10A as a gestalt of the 2nd operation. This communication system 10A is also equipped with the computer 13 for controlling VTR11A, camcorder 12A, and VTR11A and camcorder 12A as well as the communication system 10 shown in drawing 1 . VTR11A and a computer 13 are connected by serial bus 14, and camcorder 12A and a computer 13 are connected by serial bus 15. And display 13a, keyboard 13b, and mouse 13c are connected to the computer 13 for the user interface. Here, #A - #C shows the node ID on the system of a computer 13, camcorder 12A, and VTR11A, respectively. Although detail explanation is omitted, transmission of the signal in each electronic equipment in a system is performed like the communication system 10 shown in drawing 1 mentioned above.

[0055] Moreover, the computer 13 is connected to the Internet through the modem 21. VTR11A and camcorder 12A have the memory means which memorized the homepage address information of the Internet for differing in

VTR11 and the camcorder 12 in the communication system 10 shown in drawing 1 , and not having the memory means which memorized the icon information and functional information as proper information, instead acquiring the icon information and functional information as proper information. In addition, the configuration of others of VTR11A and camcorder 12A is made to be the same as that of VTR11 and a camcorder 12 respectively.

[0056] Also in the gestalt of this operation, the edit application program is installed in the computer 13, and a user can control VTR11A and camcorder 12A by actuation on the control panel displayed on display 13a, and can realize an editing task.

[0057] In case a computer 13 performs an editing task, it transmits the command which requires the icon information mentioned above and functional information to VTR11 or a camcorder 12. And VTR11A and camcorder 12A answer a letter to it considering the homepage address information of the Internet for acquiring icon information and functional information to a computer 13 as a response. A computer 13 accesses the homepage of the Internet based on the homepage address information, and acquires icon information and functional information. Thereby, the control panel which showed each function which the icon which

shows VTR11A and camcorder 11B, VTR11A, and camcorder 11B have in the form of the carbon button etc. can be displayed on display 13a like the communication system 10 shown in drawing 1 .

[0058] Here, in case icon information and functional information are required of VTR11A from a computer 13, a format of the CONTROL command transmitted to VTR11A more nearly first than a computer 13 comes to be shown in drawing 3 A. A format of the response which answers a computer 13 from the VTR subdevice 16 of VTR11A turns into a format of an ACCEPTED response as shown in drawing 3 D to it. In a format of this response, OPR shows the homepage address information of the Internet for acquiring icon information and functional information. In addition, the same is said of the case where the command which requires icon information and functional information is transmitted to camcorder 12A from a computer 13.

[0059] Thus, also in communication system 10A shown in drawing 6 , a computer 13 can require icon information and functional information of VTR11A or camcorder 12A, by the answered homepage address information, acquires icon information and functional information from the Internet, and can display an icon and a control panel on display 13a. Therefore, the same operation

effectiveness as the communication system 10 shown in drawing 1 can be acquired. Moreover, neither VTR11A nor camcorder 12A needs to have the memory means which memorized icon information and functional information, and has the profits which can save memory space.

[0060] In addition, although the gestalt of the above-mentioned implementation was the communication system with which VTR and the camcorder were connected to the computer 13 by the IEEE1394 serial bus, it can apply this invention among two or more electronic equipment like that alien system that communicates a control signal. Moreover, in the gestalt of the 2nd operation, although a computer 13 acquires icon information and functional information from the Internet by the homepage address information answered from VTR11A or camcorder 12A, it can acquire the proper information on other, for example, the specification of a device, operating, etc. from the Internet similarly, and can also display them on display 13a.

[0061]

[Effect of the Invention] According to this invention, a demand of proper information, such as functional information and icon information, is enabled from the electronic equipment by the side of control at the electronic equipment of a

controlled side. Therefore, based on the functional information answered from the electronic equipment of a controlled side, control bar flannel can be displayed, for example on the display of the electronic equipment by the side of control, it is not necessary to ask whether support the electronic equipment of a controlled side about the function shown in the control panel and, and all the functions of the electronic equipment of a controlled side can be operated on a control panel. Therefore, control of the electronic equipment of the side controlled by the electronic equipment by the side of control can be performed good [without carrying out useless processing].

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the communication system as a gestalt of the 1st operation.

[Drawing 2] It is drawing showing the part which performs the command of VTR and the exchange of a response which constitute the communication system as a gestalt of the 1st operation.

[Drawing 3] It is drawing showing the command at the time of requiring icon information and functional information, and the format configuration of a response.

[Drawing 4] It is drawing showing the example of operation at the time of a computer continuing and requiring icon information and functional information of VTR.

[Drawing 5] It is drawing showing the example of a display of an icon or a control panel in the display screen of a display.

[Drawing 6] It is the block diagram showing the communication system as a gestalt of the 2nd operation.

[Drawing 7] It is the block diagram showing an example of the communication system which comes to connect two or more electronic equipment by IEEE1394 serial bus.

[Drawing 8] It is drawing showing an example of the DS on the bus in the communication system using an IEEE1394 serial bus.

[Drawing 9] It is drawing showing the structure of an asynchronous (Async) communication link packet.

[Drawing 10] It is drawing showing the part which performs the command of VTR and the exchange of a response which constitute the communication system using an IEEE1394 serial bus.

[Drawing 11] It is drawing showing the format configuration of a command and a response.

[Description of Notations]

10 10A [... 14 A computer, 15 / ... An IEEE1394 serial bus, 16 / ... A VTR device,

17 / ... An IEEE1394 bus transceiver block, 21 / ... Modem] ... 11 Communication system, 11A ... 12 A video tape recorder (VTR), 12A ... A camera one apparatus video tape recorder (camcorder), 13

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	13/00	３５１			13/00	３５１Ｇ
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(54)【発明の名称】　通信制御方法、通信システムおよびそれに用いる電子機器

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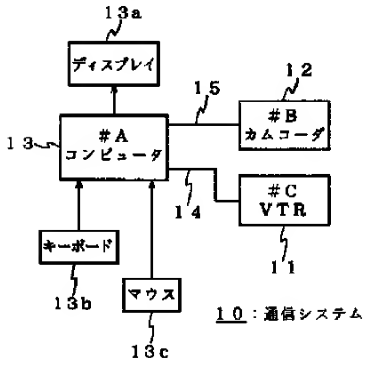
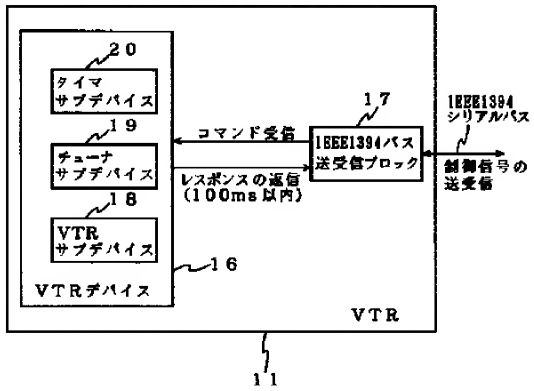
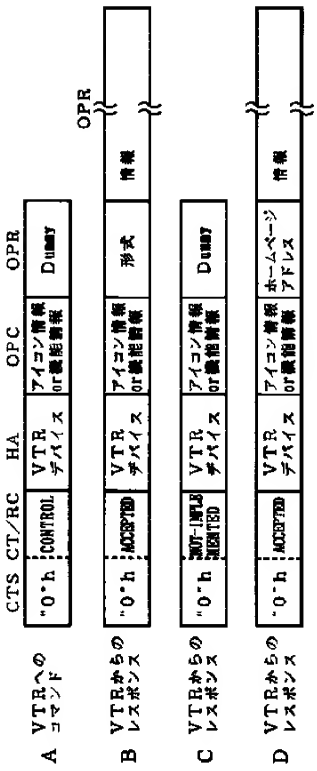
第１の実施の形態（通信システム）



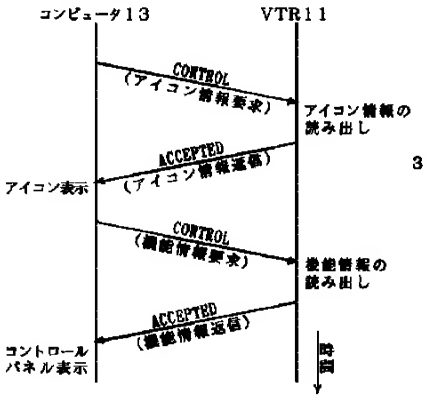
VTRのコマンドやレスポンスのやりとりを行う部分



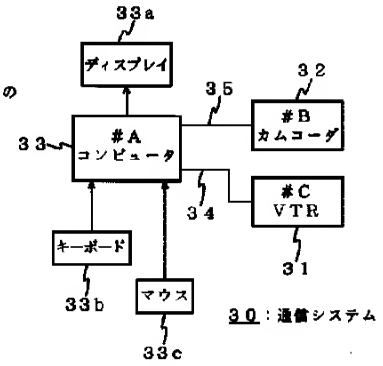
コマンドおよびレスポンスのフォーマット構成



アイコン情報、機能情報の要求動作例



IEEE1394シリアルバスを用いた通信システムの一例



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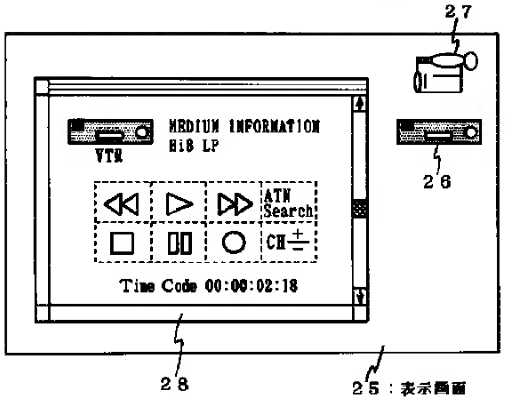
アイコンやコントロールパネルの表示例



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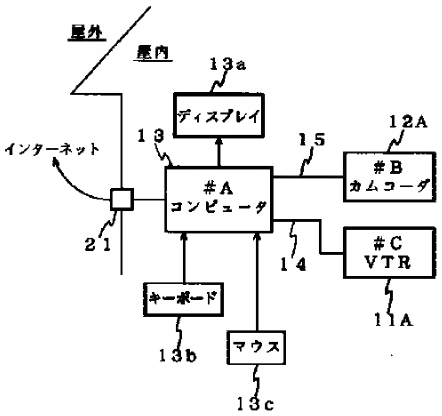
第２の実施の形態（通信システム）



10A：通信システム

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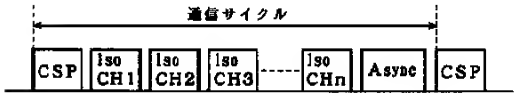
IEEE1394シリアルバスを用いた通信システムにおけるバス上のデータ構造の一例



CSP：サイクルスタートパケット
Iso：Iso通信パケット
Async：Async通信パケット

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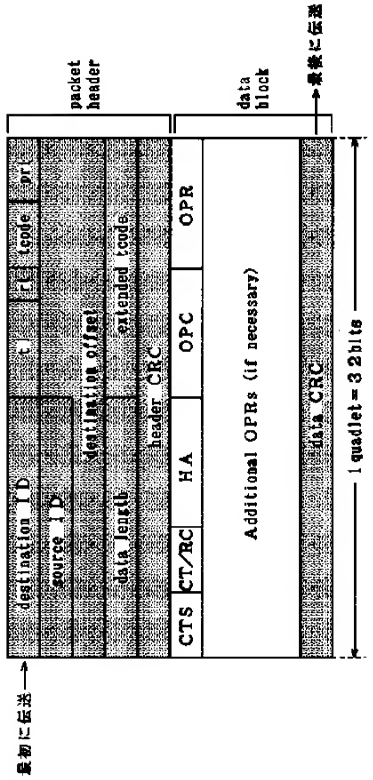
Async通信パケットの構造



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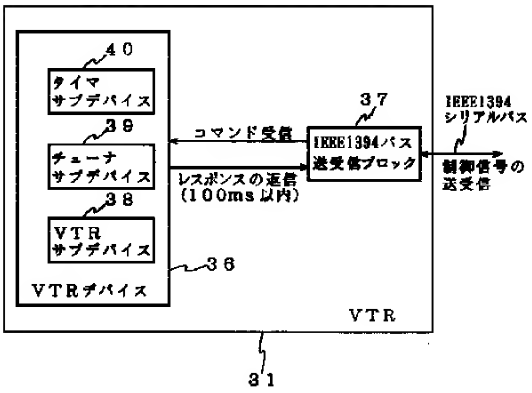
VTRのコマンドやレスポンスの
やりとりを行う部分



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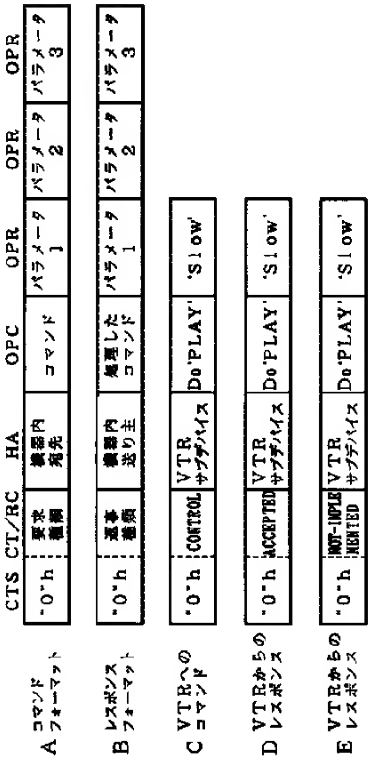
コマンドおよびレスポンスのフォーマット構成